Name Date

NASA's KSNN

KIDS SCIENCE NEWS NETWORK

PROBLEM

Does weight affect the amount of force you need to lift an object?

MATERIALS

balloon
masking tape

Per group
straw
small paper cup (3-oz size)
string scissors
20 paper clips hole punch
clothespin

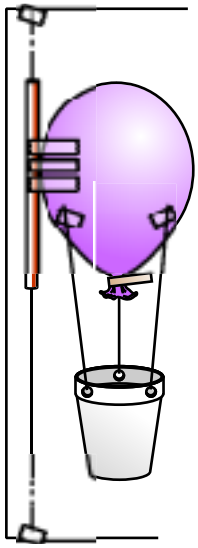
How High Will It Go?

Diagram 1

PROCEDURE

1. Measure the distance from the ceiling to the floor. Add 15 cm to that measurement and cut a length of string for that amount.
2. Tape or tie the string to a spot on the ceiling. Thread the straw onto the string.
3. Stretch the string taut and tape it to the floor.
4. Using a hole punch, punch three holes, evenly spaced, around the top of the cup. See diagram 1.
5. Cut three pieces of string 30 cm each.
6. Tie one string in each hole of the cup.
7. Blow the balloon up but do not tie it off. Use a clothespin to keep the air from escaping until ready to release.
8. Position the cup under the balloon and tape the other ends of the strings to the balloon so that it looks like a hot air balloon with a basket under it.
9. Tape the balloon to the straw. See diagram 2.
10. Lower the balloon to the floor, count down, and release.
11. Mark how high the balloon rose on the string.
12. Measure and record.
13. Blow the balloon up again, being sure that it is about the same size as before, but this time place 5 paper clips in the basket.
14. Repeat steps 12-14.
15. Repeat steps 15-18, adding five paper clips at a time until the balloon will no longer launch.
16. Analyze data and draw graph.

Ceiling



Floor

Diagram 2

Balloon launch	Launch height in cm from floor
1 with no paper clips	
2 with 5 paper clips	
3 with 10 paper clips	
4 with 15 paper clips	
5 with 20 paper clips	

CONCLUSION

What happened to the launch height as you added weight? Explain why this occurred.

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